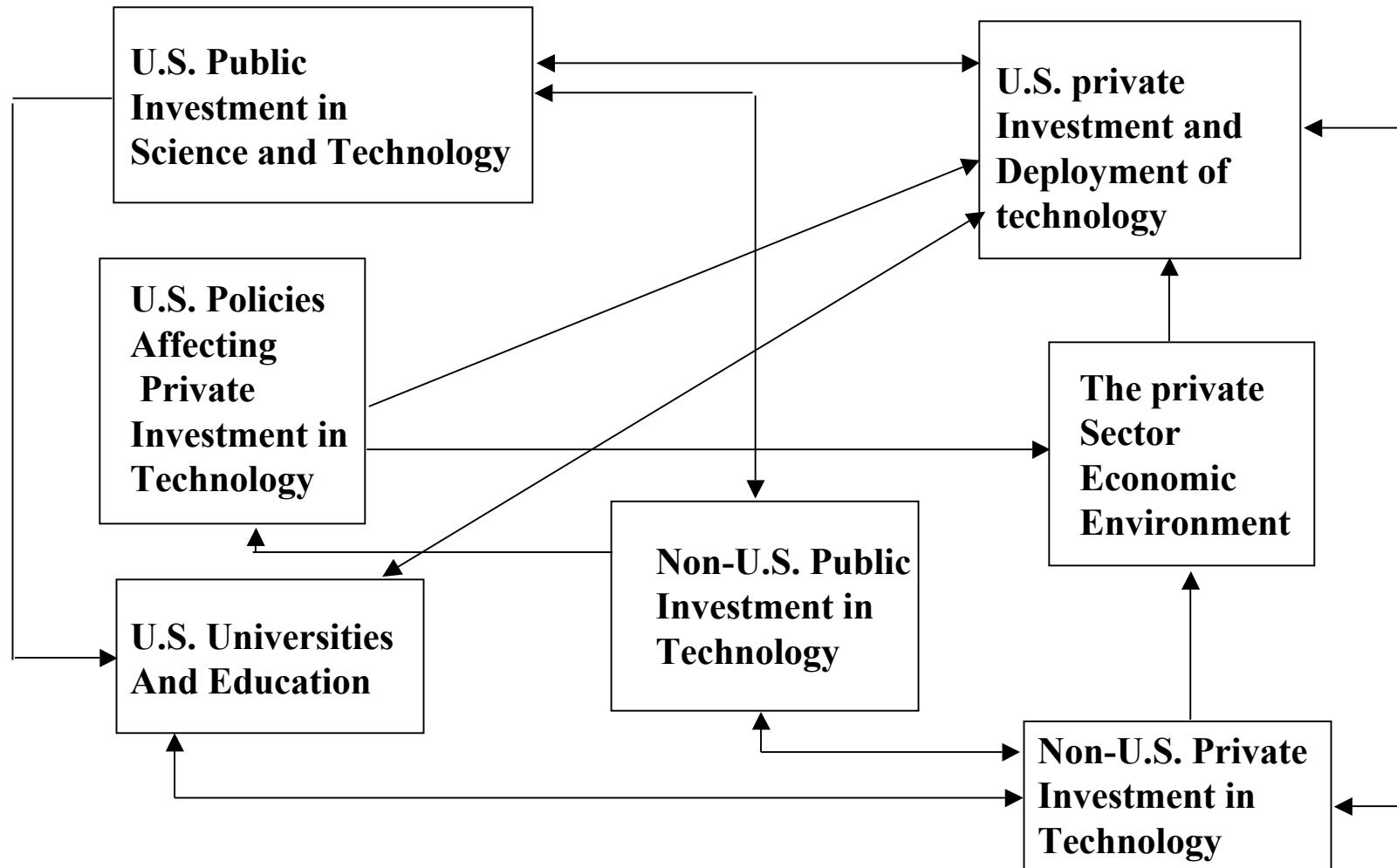

The U.S. Firm in the Global Innovation System

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Elements of Global Innovation System



After: M. Spence, 1996

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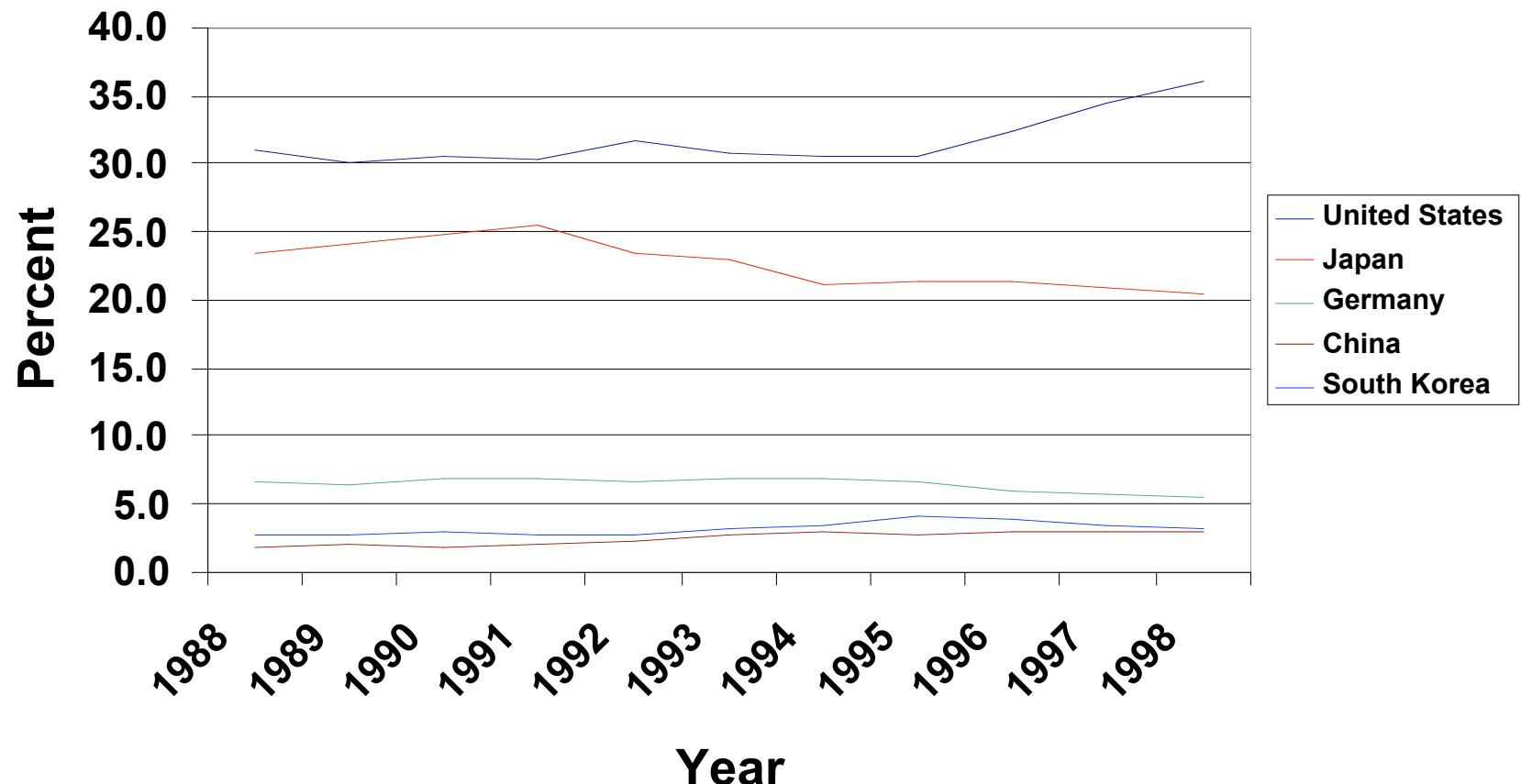
The Innovation System

- Broad portfolio of basic science and technology
- University based research
- Open System with results freely available
- Defense R&D spill over into civilian economy
- Combination of venture capitalists, large corporate research, and start-ups
- School of engineering and medicine sources of spin-outs
- Balanced use of intellectual property protection

Performance Observations

- Increased U.S. High Tech Firm's Global Market Share
- Increased Private Funding of R&D
- Privatization of Information
 - Increase of Patents
 - Reduced U.S. Scientific Publications
- Shift to Services
- Rising Importance of Research Universities
- Market Driven R&D
- Rise and Fall of Venture Capital
- Globalization of R&D

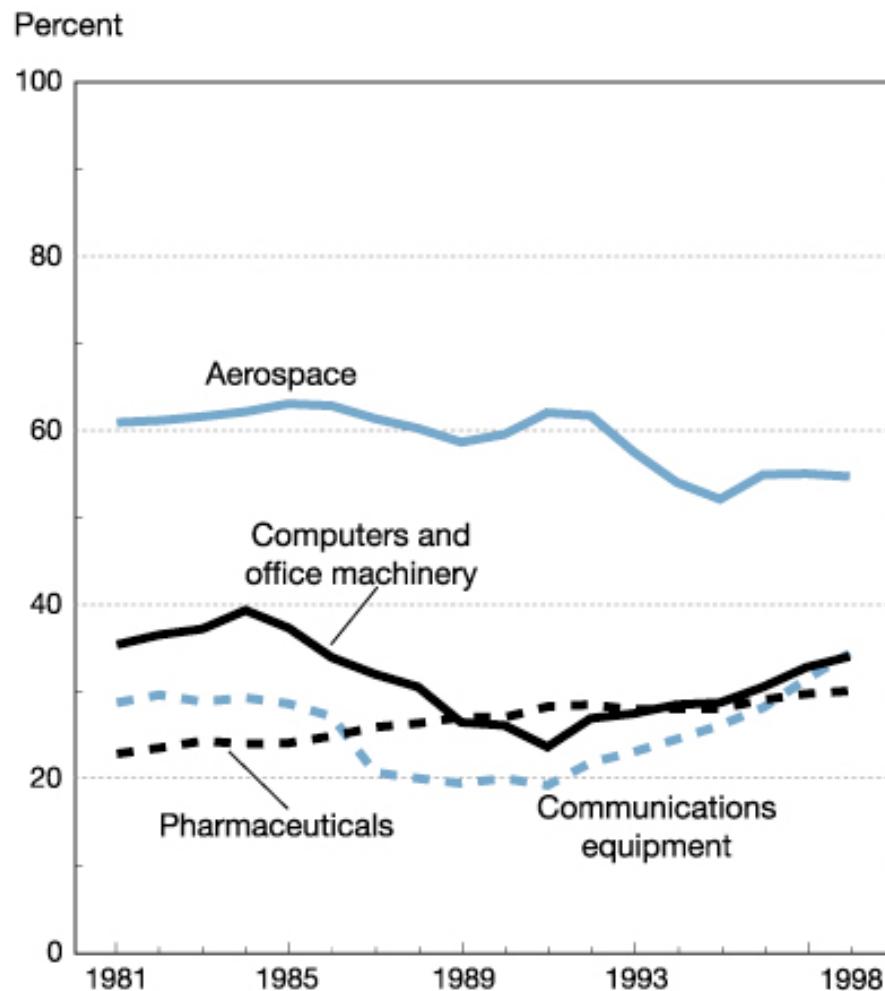
High Technology Global Market Share



Source: nsf

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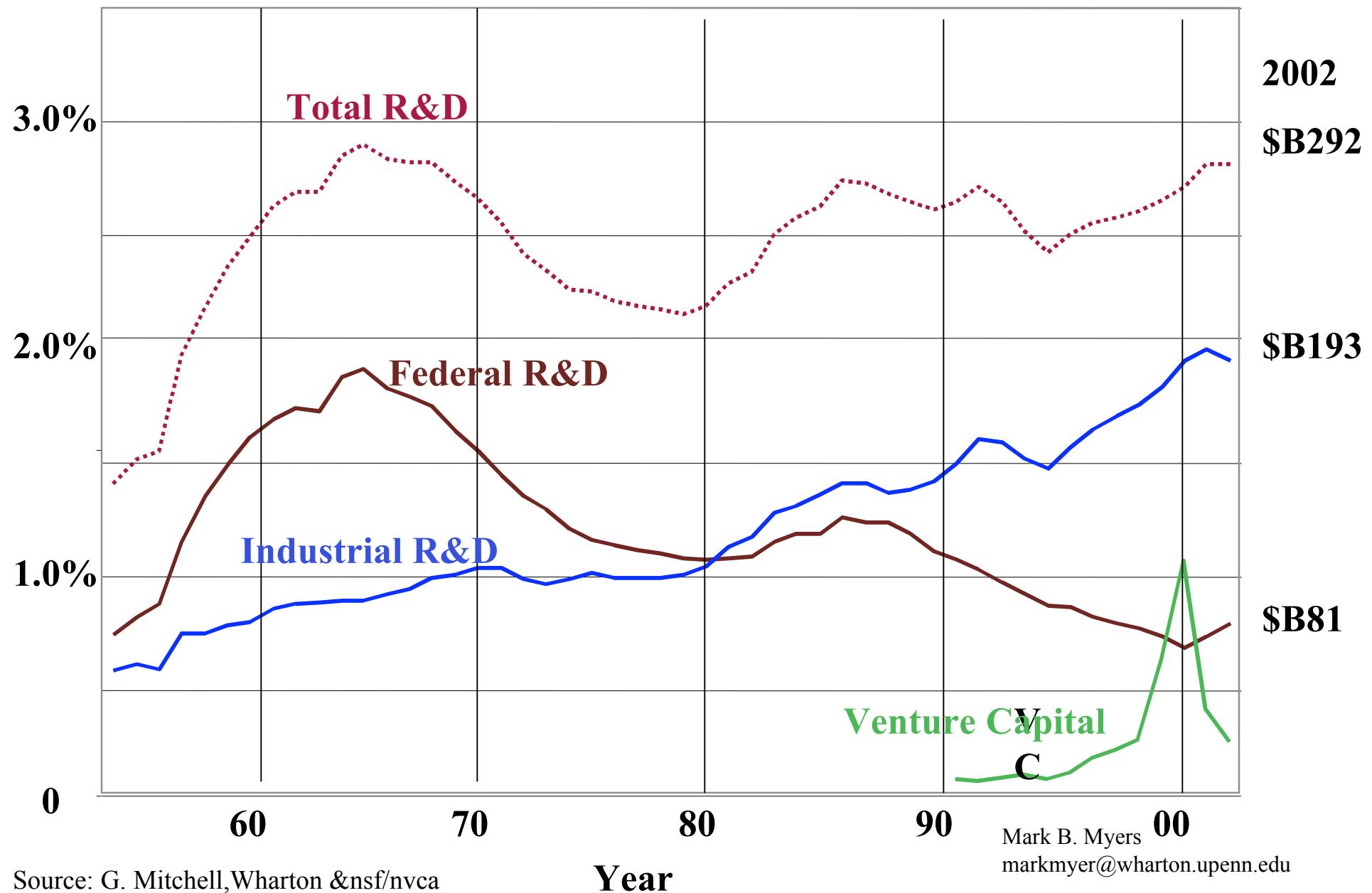
U.S. global market share, by high-tech industry: 1981-98



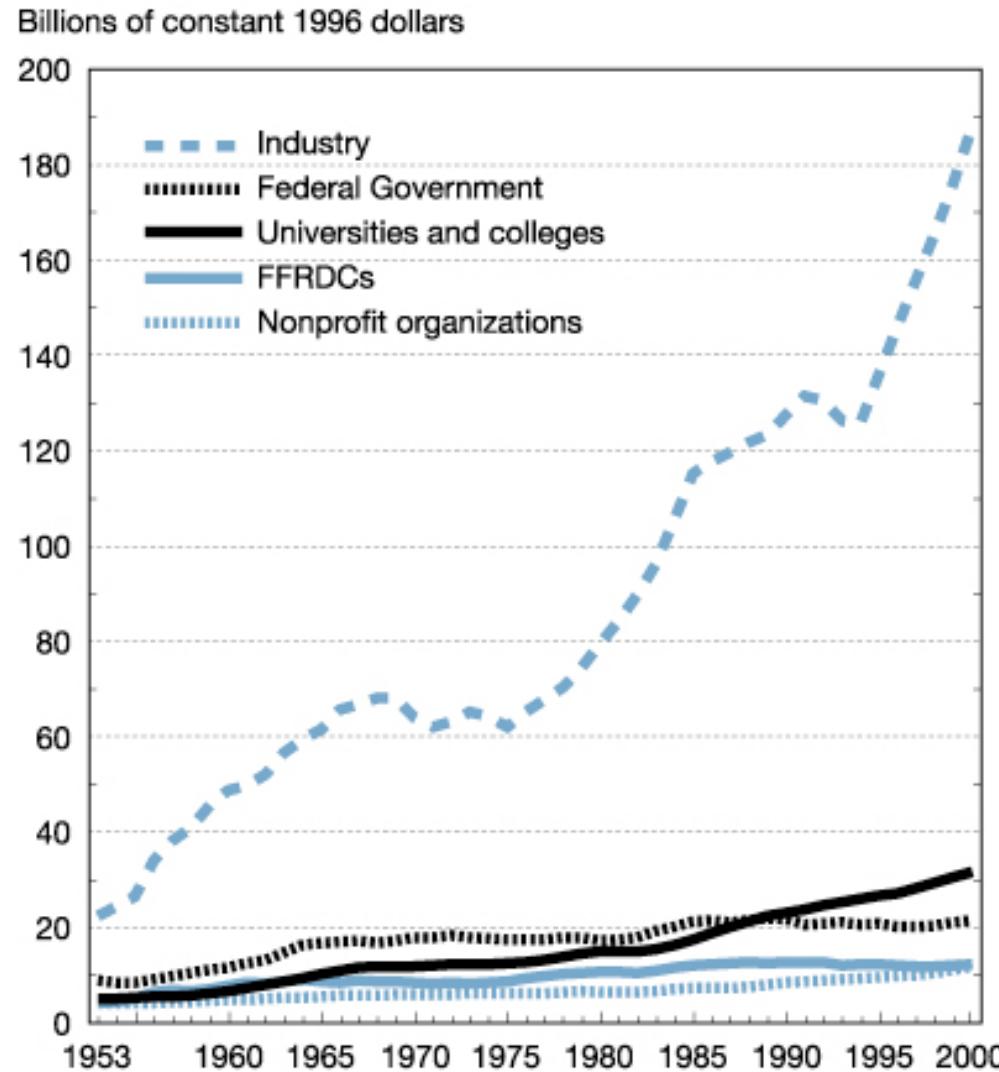
Source: nsf

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National R&D and Venture Capital - %GDP



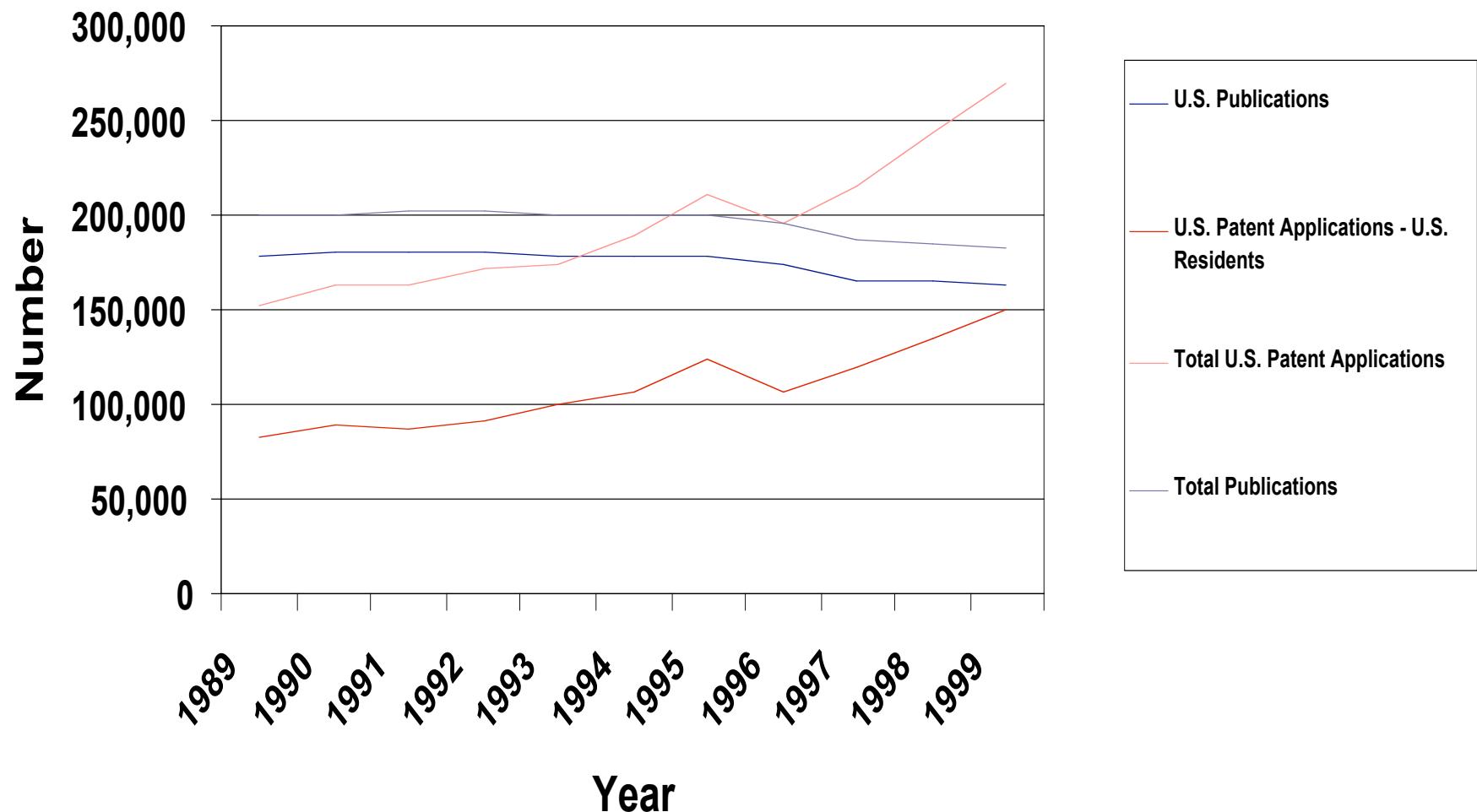
National R&D performance, by type of performer: 1953-2000



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Privatization of Information

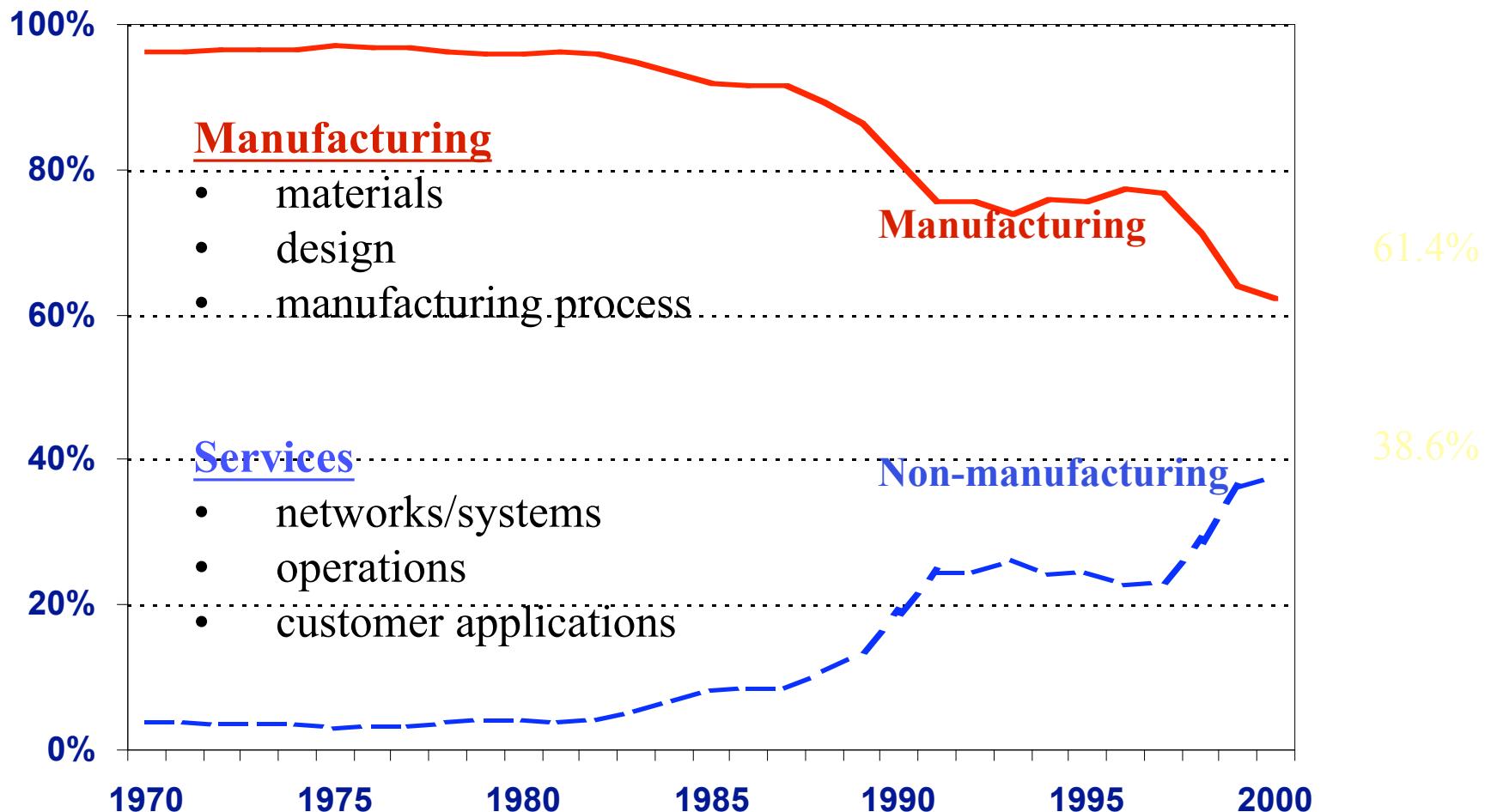


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R&D performance by Industrial Classification

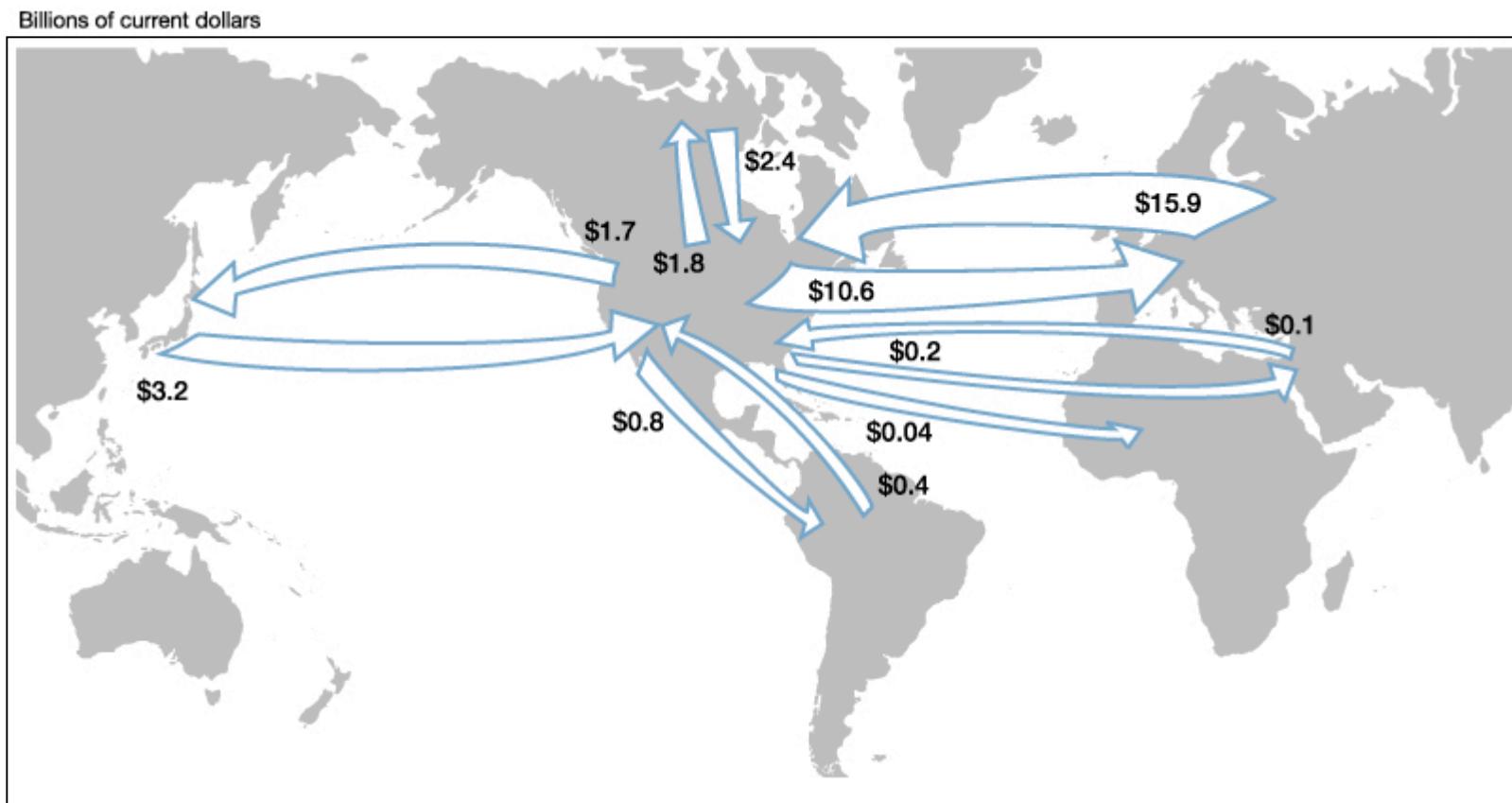
Percent Total



Source: G. Mitchell, Wharton and nsf

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Industrial R&D spending flows of U.S. and foreign affiliates, by world region: 1998



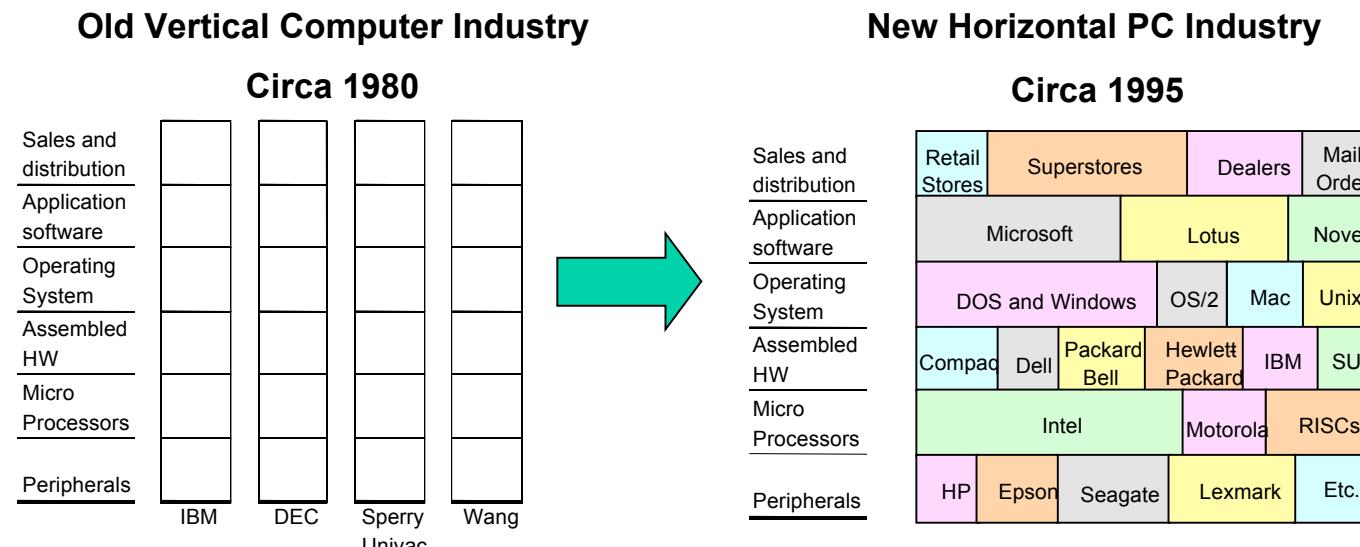
Source: NSF

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Industry Transformation

(Derived from: Grove, Andrew S., Only the Paranoid Survive.

Bantam Doubleday Dell Publishing Group, Inc., New York, NY.

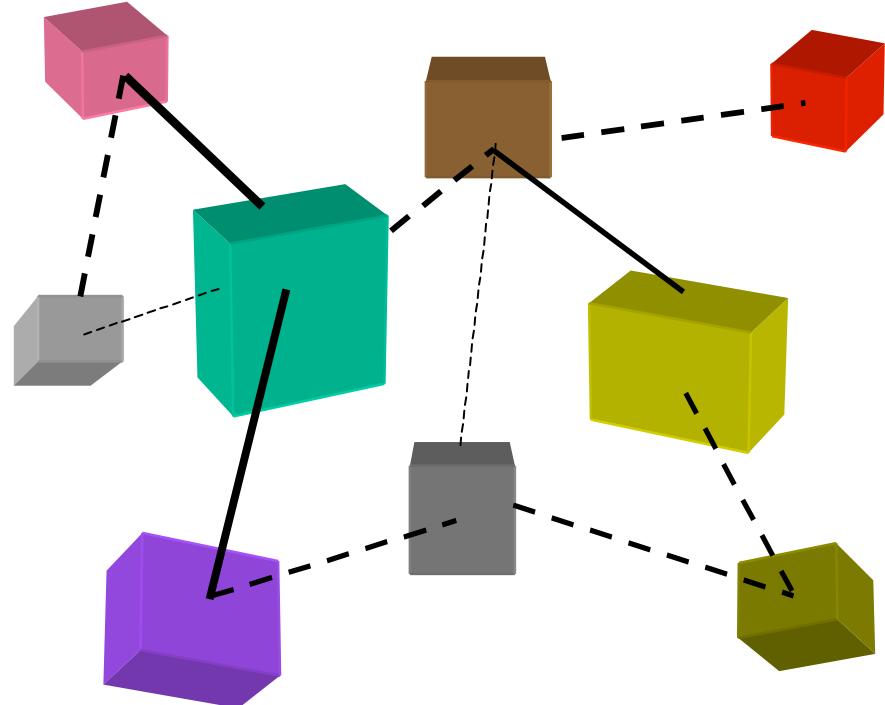


M.B. Myers, December 10, 1999

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Extended Enterprise

- Flat, virtual
- Webs of trust
- Dynamic links
- Outward engagements
- Competency centered
- Global



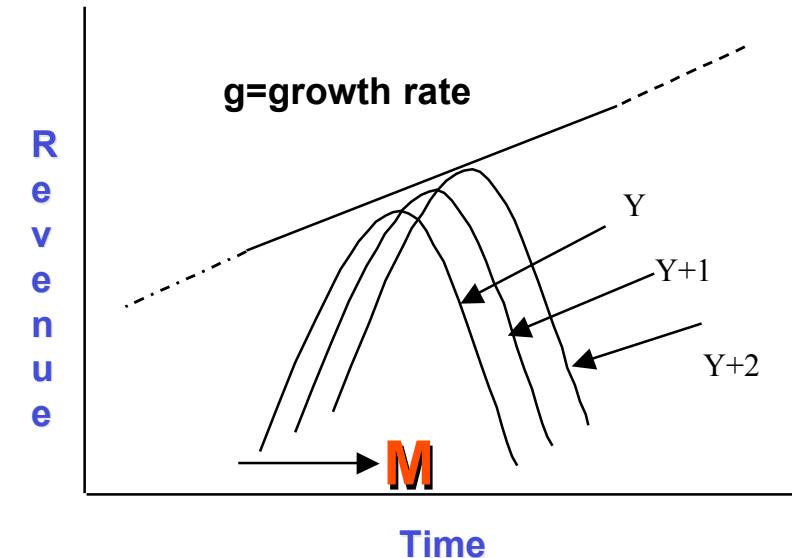
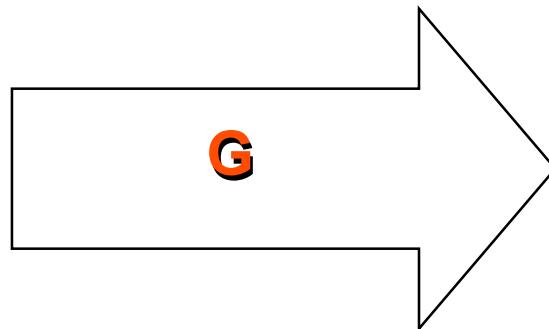
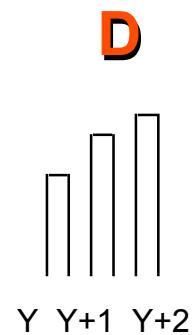
Market Driven “R&D”

- The value creation concept
- The management team
- The market segments
- The technology
- The financial plan

Technology Centric Innovation

Patterson Model

M. L. Patterson, J. PROD. INNOV. MANAG 1998, 15:390-402



R&D Input

Firm Gain Function

Revenue Performance

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Revenue Waves

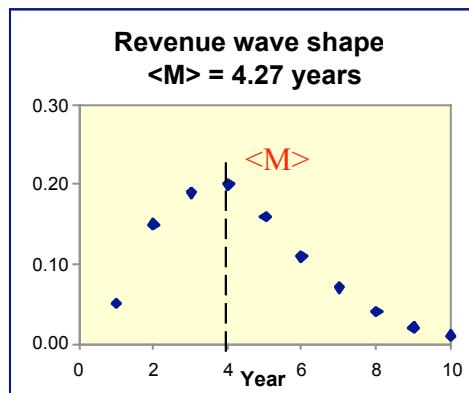
Matched to historical parameters:

$$g = 5\%$$

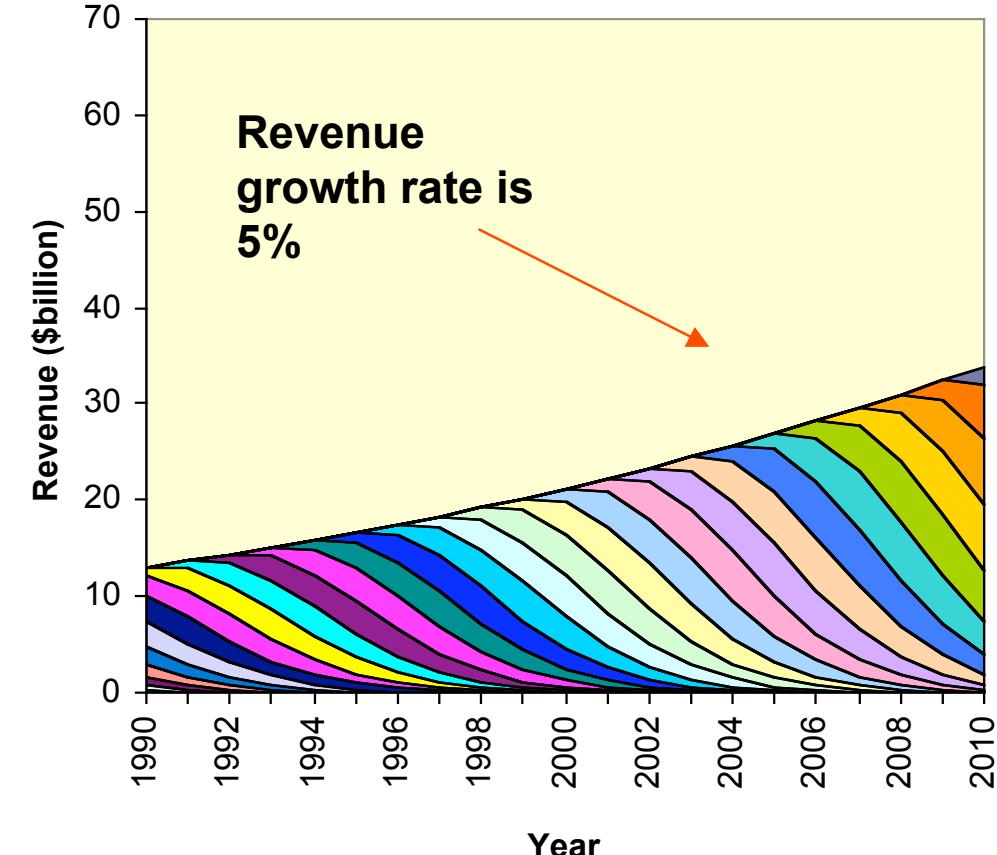
$$D = 6.5\%$$

$$G = 18.7$$

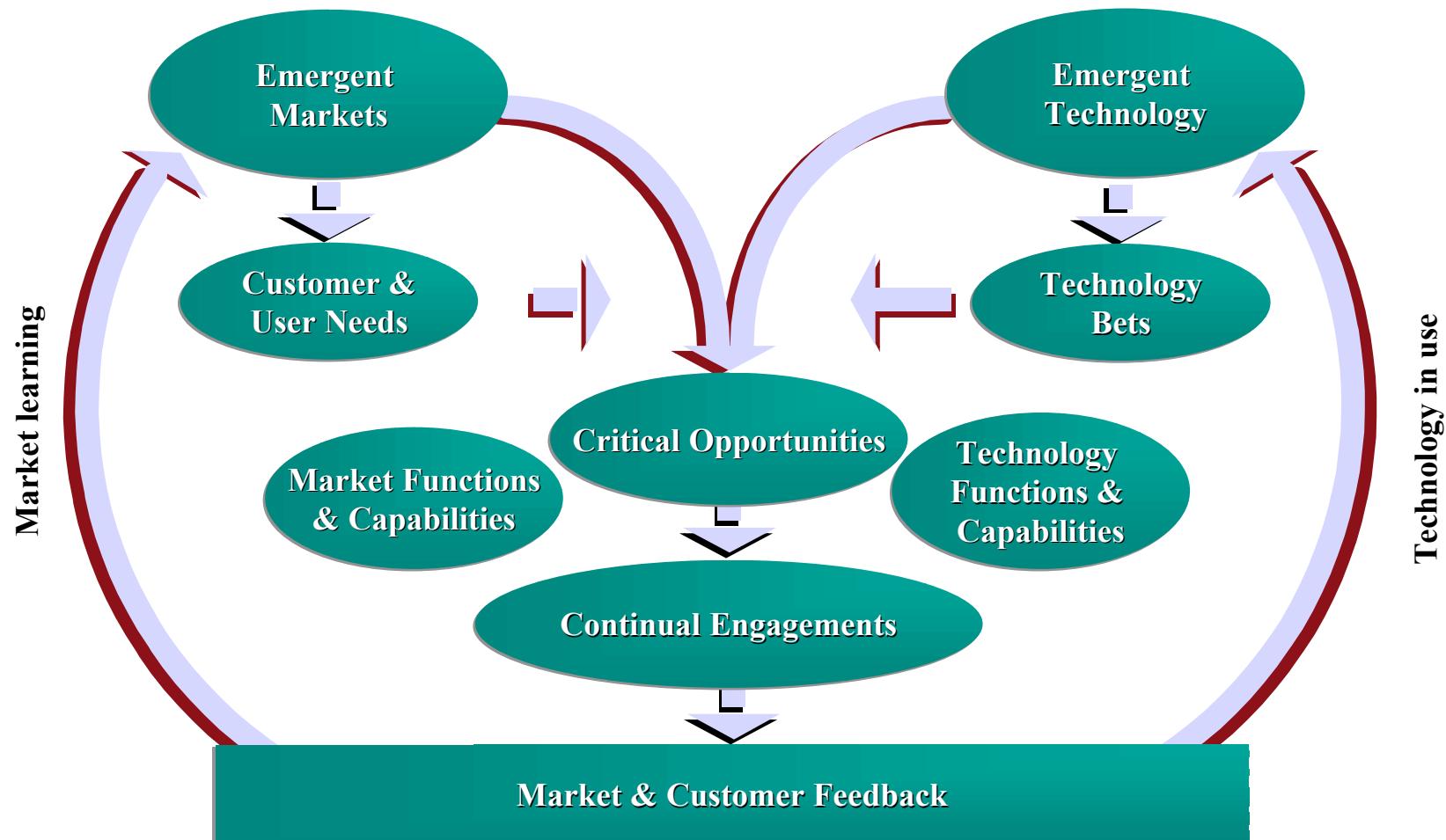
$\langle M \rangle = 4.27$, revenue wave shape:



Xerox simulation: historical parameter values to 1999

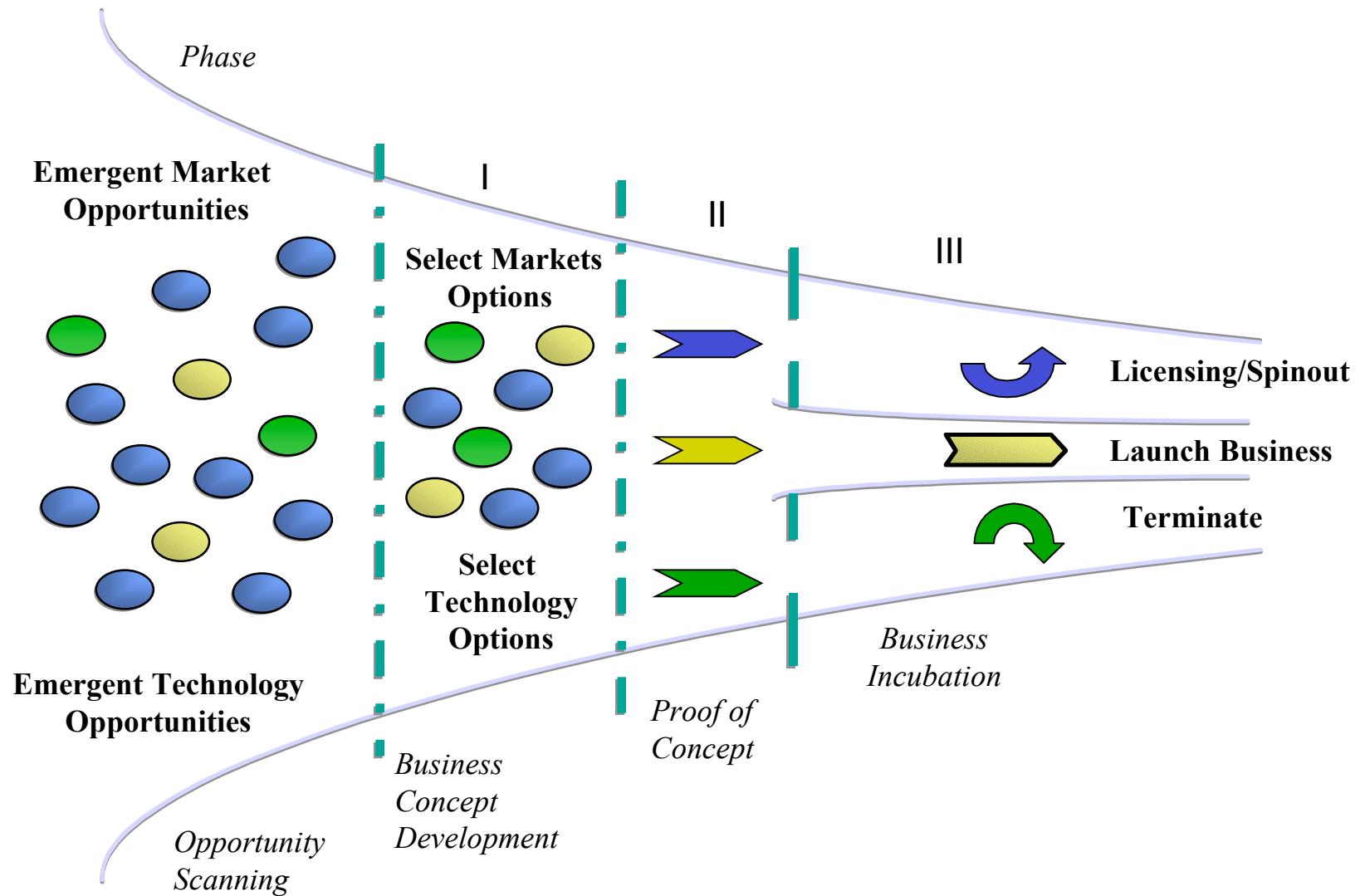


Innovation → Creating New Business Value



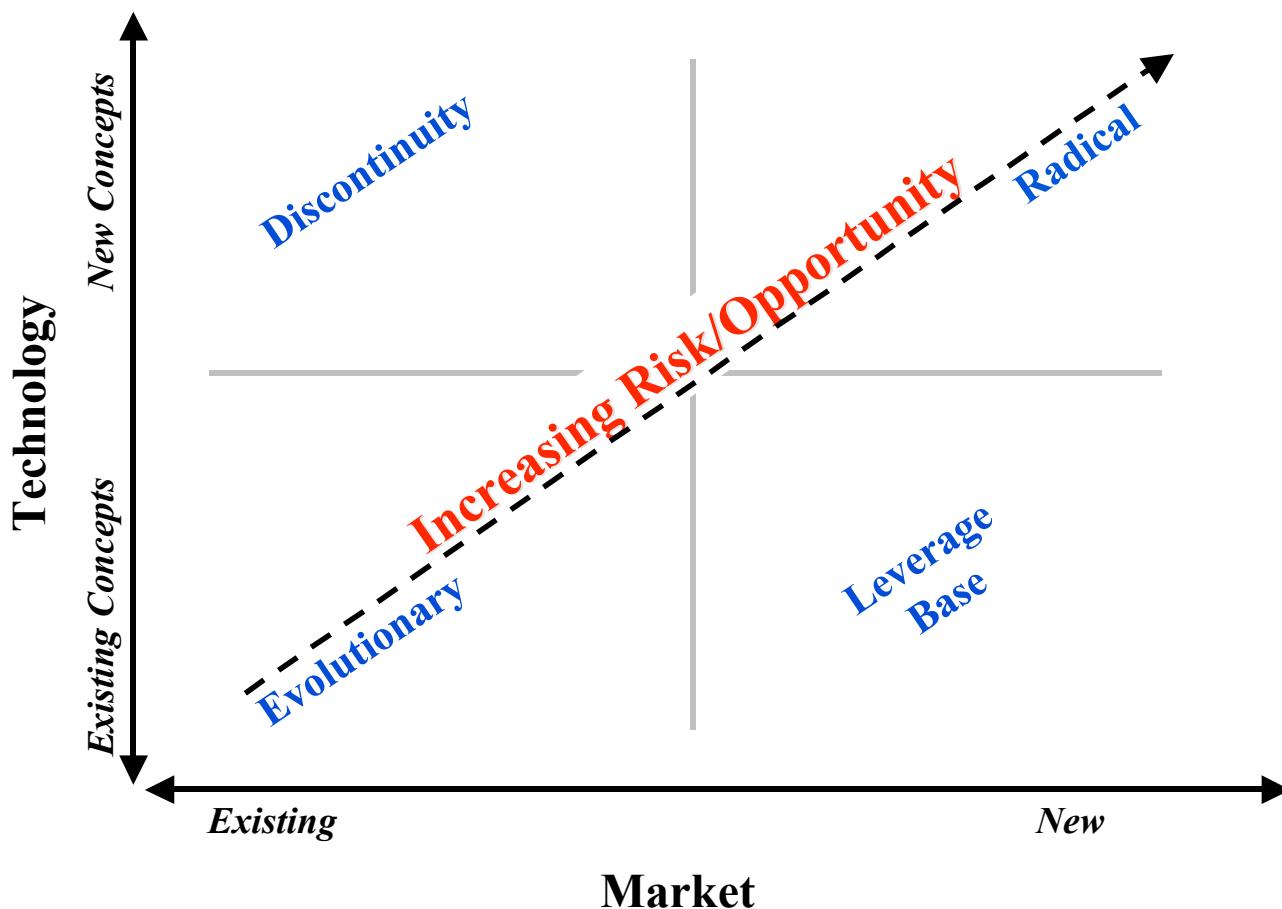
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The Innovation Pipeline



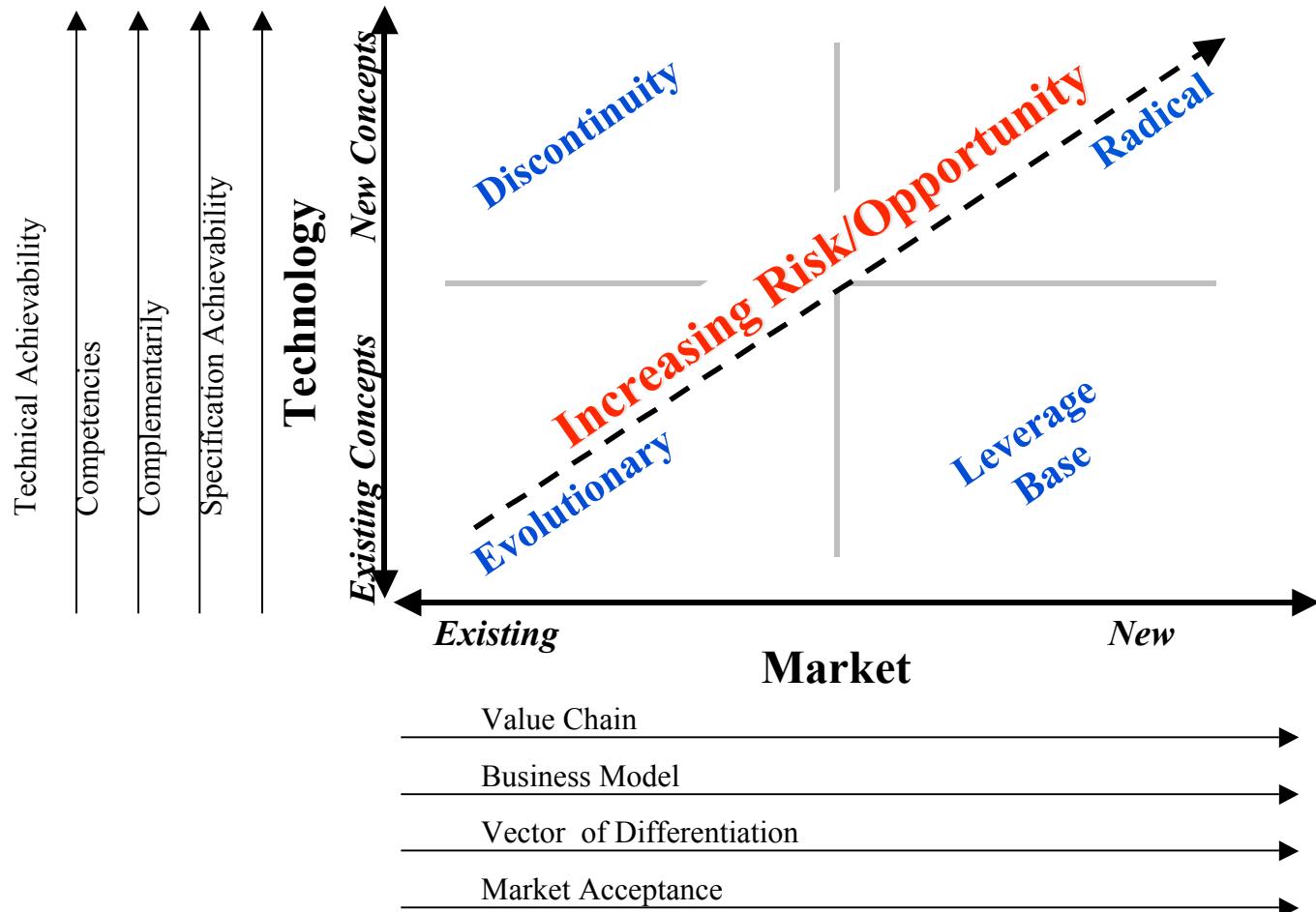
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Fields of Risk / Opportunity



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Fields of Risk / Reward



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Issues for the Innovation System Going Forward

- Impacts on technology of current economy
- Size of the information commons
- Role of venture capital
- Continuation technology driven productivity
- Role of universities & source of basic science
- Politics of the global economy